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The case for Neanderthal survival: fact, fiction or faction?

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What, you may say, is 'Antiquity' doing giving valuable space to a discussion of wild men in Outer Mongolia? Is it to be the Abominable Snowman in the Christmas issue? But joking apart, we think that Dr Myra Shackley, Lecturer in Archaeological Science, University of Leicester, deserves a hearing. Recent research, to describe Mousterian sites, took her on a British Council Fellowship to the University of Ulan Bator, capital of Outer Mongolia. Fieldwork in the Altai stimulated an interest she has had for nine years in the possibility of Neanderthal survival. She has put together much sound evidence for the existence of 'Almasti', and she here puts forward the conflicting arguments for the continuing existence of a pocket of Neanderthaloid man. She says she would describe herself as 'only half sceptical about the possibility of Neanderthal survival'.

It is a truism to state that human evolution is a frighteningly complex subject. It is all too easy to yield to the temptation to construct ever more elaborate 'family trees' even though the fossil record is fragmentary and chronologically inexact. The supposed fate of Neanderthal man (*Homo sapiens neanderthalensis*) and the origin of modern man (*Homo sapiens sapiens*) have recently received a good deal of attention—most of which serves to emphasize the gaps in our knowledge without coming much nearer to a solution. This review presents some of the conflicting arguments which have been put forward, stressing a need to keep an open mind about the possibility of Neanderthal survival.

According to many standard texts Neanderthal* man became extinct some 35,000 years ago, but the cause and reasons for this phenomenon remain enigmatic. It is becoming increasingly clear that a re-appraisal of the evidence is necessary, assessing first of all whether or not the fossil record supports the catastrophist theory. In the face of a large amount of data suggesting, at the very least, a period of considerable overlap between Neanderthal and *sapiens* man, inter-cultural contact of some kind in the late Pleistocene becomes a possibility. It is imperative to consider what evolutionary mechanisms might have been operating within Neanderthal society at this time, relating them to what is known about Neanderthal social and biological organization. The appearance of Neanderthal man marks a quantum leap forward in evolution; a watershed, perhaps, between evolved primates and fully human beings. Neanderthals were efficient and adaptable survivors with an advanced social sense, caring for sick, wounded, and elderly non food-contributing individuals, and practising ritual burial.

It has always seemed surprising that such a comparatively sophisticated society should seem suddenly to have ended. At the outset, the matter is complicated by a lack of general agreement on basics, even on what is meant by the term 'Neanderthal'. It may be used as an evolutionary grade, an anthropological state or a biological description, and in this article it is used to describe those hominids whose remains can be shown to bear a morphological resemblance to the famous type-fossil of *Homo sapiens neanderthalensis* found in 1856 in a cave in the Neander valley near Dusseldorf (FIG. 1). (It is, perhaps, unfortunate that the first skeleton to be found should be of the 'classic'

* The original spelling is Neander*thal* not Neander*tal*. Vallois (1952) said that this should be retained for *Homo sapiens neanderthalensis* but changes in German orthography made the spelling Neandertal more correct. This has led to much confusion, and the original spelling is retained in this article.

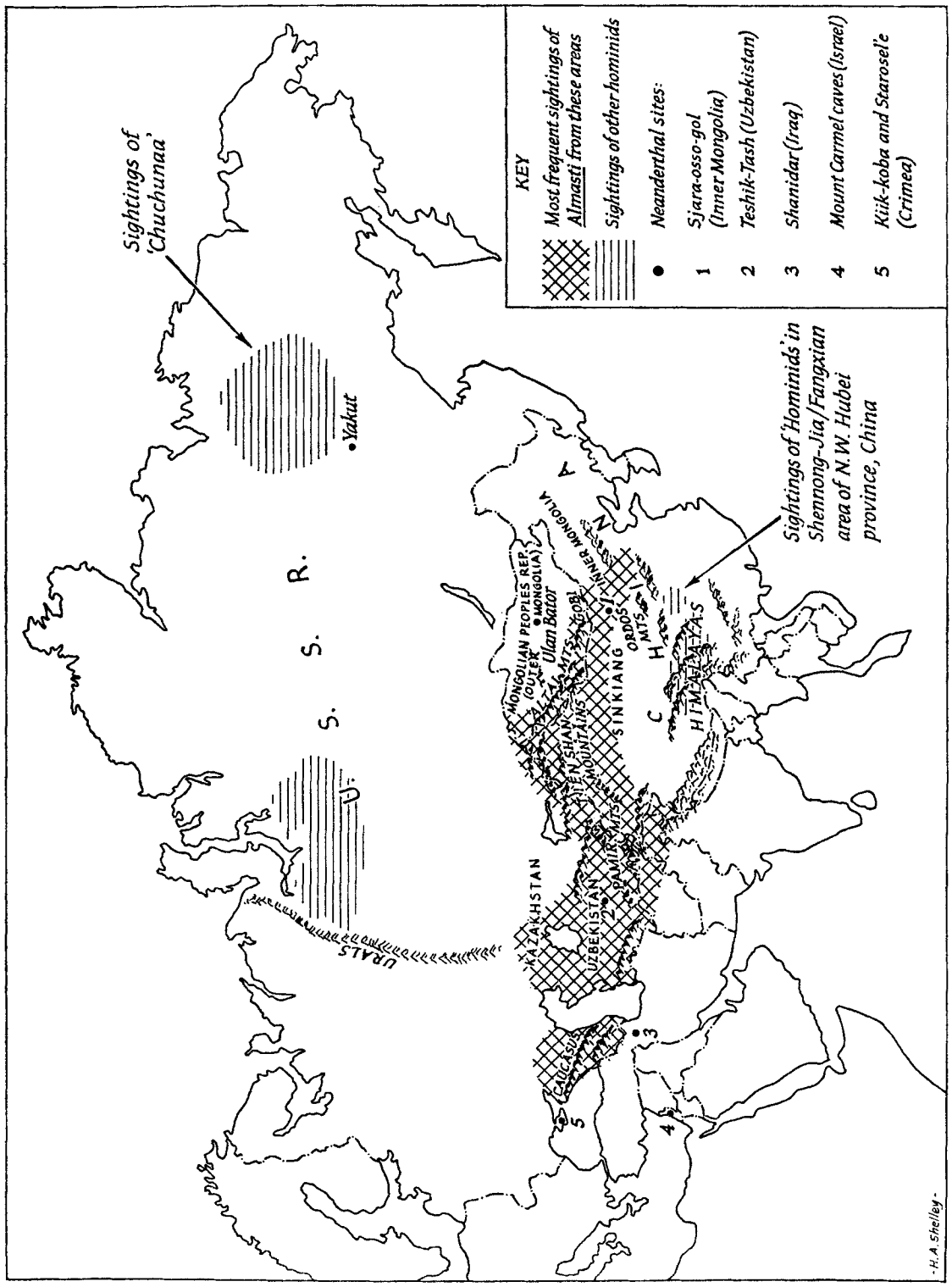
KEY
Most frequent sightings of Almasti from these areas
Sightings of other hominids
Neanderthal sites:
1 Sjara-osso-gol (Inner Mongolia)
2 Teshik-Tash (Uzbekistan)
3 Shanidar (Iraq)
4 Mount Carmel caves (Israel)
5 Kiik-koba and Starosel'e (Crimea)
Sightings of 'Chuchunaa'
Yakut
Sightings of 'Hominids' in Shennong-Jia/Fangxian area of N.W. Hubei province, China
S. S. R.
MONGOLIAN PEOPLES REP. (OUTER MONGOLIA)
Ulan Bator
INNER MONGOLIA
SINKIANG
ORDOS
HIMALAYAS
KAZAKHSTAN
UZBEKISTAN
CAUCASUS
URALS
H.A. Shelley

Fig. 1. Key map

type since it has conditioned both public and expert views of what has come to be termed the 'classic' Neanderthal physiognomy, ever since.)

There is, as might be expected, considerable morphological variation between different specimens, and the 'classic' form is only one specialized variant of a larger population. In 'classic' Neanderthals the frontal region of the skull was flattened, the brow ridges very prominent, and the occipital region expanded into a bun-like swelling. This resulted in a large face with a broad nasal aperture, big jaw and big teeth with enlarged pulp cavities (taurodontism). Postcranial skeletal remains are remarkable for the strongly inscribed muscle attachments and general robustness. Neanderthals were short, stocky and muscular, with body proportions similar to those of modern man and a brain capacity of 1300–1610 cc, which overlaps and sometimes exceeds that of modern man (1195–1520 cc). Many theories have been advanced for the evolution and inter-relationships of the different Neanderthal types, but there is now a certain measure of agreement in recognizing the evolution of both Neanderthal and modern forms from a basic unspecialized *Homo erectus* stock. There is, however, no agreement as to the dates at which these evolutionary lines diverge. It is clear that the different forms of Neanderthal dominated Europe, Asia and Africa between 125,000–35,000 BP. The scanty archaeological record indicates that this dominance was ended in different areas at different times, but whatever the cause modern (Cro-Magnon) *Homo sapiens sapiens* gradually replaced the Neanderthals. One theory sees two divergent evolutionary lines combining to produce a stock from which modern man emerged. This assumes that the 'classic' Neanderthals were not so different in physical appearance or skills from the earlier *Homo erectus* populations as to preclude genetic merging, an assumption supported by the work of Stringer (1974) who has shown that morphologically early Neanderthals more closely resemble modern man than the later ones. A second school of thought sees the 'classic' strain being extinguished by evolutionary transformation into modern man, although the biological mechanisms by which this might have been accomplished are unclear. Three alternatives remain:

(1) that the 'classic' Neanderthals became extinct through overspecialization at the same time as modern man arrived:

(2) that they effectively disappeared because of social and cultural merging and inbreeding: or,

(3) that Neanderthal man was forced out of the best hunting grounds (and thus the archaeological record) into remote areas where small populations could have survived.

Any combination of these three theories can also be considered. Even less is known about the fate of the less specialized or 'progressive' Neanderthals which have often been regarded as hybrids, but if a modified polyphyletic evolutionary model is accepted, then it is clear that a very wide variety of 'Neanderthals' were around at the same time.

The idea that Neanderthal man *must* be extinct since modern man can be the only surviving hominid species is outmoded biological arrogance. One has only to consider the large number of primates (for example *Rhinopithecus* the snub-nosed langur, and *Pan paniscus* the African pygmy chimpanzee), which have been discovered in the last 150 years. It can be said, with some truth, that yesterday's myths are today's scientific discoveries, and this has certainly been the case with the mountain gorilla (*Gorilla gorilla*) whose existence in the nineteenth century was summarily dismissed as improbable. Basically it is a matter of the feasibility of survival.

Three questions become important: first, whether such survival would be possible; secondly, in what areas it might be expected; and thirdly, whether there is any positive evidence.

For example, recent work in the high mountain areas of southern Russia and Mongolia amply demonstrates the existence there of some form of so far unclassified hominoid. These creatures, called *Almas*, closely resemble Neanderthal man in many ways. The link between the present existence of the Almas and the former existence of Neanderthals cannot at present be more than speculative, but it is important to keep an open mind. Ap Simon (1980, 272) says that we should 'refuse explanations for the disappearance of Neanderthal man which rely on unverifiable assumptions of the inferiority of his intellectual and social capabilities.'

So what is the current evidence for Neanderthal survival?

EVOLUTIONARY DISADVANTAGES

In February 1976 the Yakut branch of the Soviet Academy of Sciences described in *Nature* (Owen,

1976) the characteristics of a group of 'palaeo-asiatic aborigines' called *Chuchunaa* ('outcast' or 'fugitive') currently living in northern Siberia. The last of the numerous reliable sightings dates to the 1950s, but more recent reports suggest that the hominoids have withdrawn to the more remote reaches of the rivers Yana and Indigira as a result of the increasing encroachment of modern man in the area. (Extensive details of the west Siberian and Yakut reports are given by Pushkarev (1978).) Professor Rinchen, working from the University of Ulan Bator (Heuvelmans & Porchnev, 1974; Napier, 1972), suggested that the same thing was happening to Almas populations of the Gobi as a result of military activity. Russian *Chuchunaa* sightings describe the hominoids as having protruding brow ridges, matted hair, heavy beards and 'lively expressions'. Reports of stature vary, and some specimens up to two metres in height were observed. One of the most interesting aspects of the description is that the *Chuchunaa* are apparently inarticulate, communicating only in modulated whistles and without properly developed speech. Various authorities have suggested, on the basis of restored vocal tracts, that the relatively primitive single-tube tract of 'classic' Neanderthal man could produce only a restricted range of sounds, not fully articulated human speech (Lieberman & Crelin, 1971) although earlier hominids including the *Homo erectus* fossil from Steinheim already possessed the ability for fully articulate speech and a two-tube vocal tract similar to our own (Crelin, 1976). This view of a limited communicational ability has, however, been contested, notably by Catford (1977) who pointed out that much of the data for modern speech used in the computer-generated analyses of sound potentials from different vocal tracts (Lieberman, 1968; 1970) were drawn only from American-English speakers, and many modern languages exist with far fewer vocalic distinctions than English. However, this potential verbal ineptitude has led to much speculation about Neanderthal communication, notably by fiction writers. William Golding, in his novel *The Inheritors* (1955), considered the possibilities of extra-sensory perception, and Auel (1980) in a recently published evocation of Neanderthal society suggests the combination of sign language and restricted oral sounds.

A potential difficulty in communicating abstract ideas raises the interesting questions of whether or not this was an evolutionary disadvantage. The more 'progressive' Neanderthals like Skuhl V (Ronen, 1976) had vocal tracts similar to our own, reinforcing the point that the term 'Neanderthal' covers a very wide variety of different hominids.

Musgrave (1971) carried out a multivariate statistical analysis of Neanderthal, Upper Palaeolithic (*Homo sapiens sapiens*) Mesolithic and modern handbones, and suggested that not only were Neanderthal men's hands not as dextrous as those of living man but they were morphologically and metrically unique. The Neanderthal hand had a powerful grip combined with a voluminous pulp cavity around the thumb (possibly an adaptation to cold) which would have made the hand rather clumsy. The thumb was imperfectly opposed to the fingers and the bones of the index fingers suggested that Neanderthals used rather a crude precision grip of the 'pinch' or 'key' kind. The combination of reduced dexterity and imperfect speech abilities certainly does not augur well for the continued survival of 'classic' Neanderthal characteristics in the gene pool. It might also be the reason why Neanderthal technology is lacking in continuous innovation and developed art.

Thus it seems possible that some strains of 'classic' Neanderthals were indeed at an evolutionary disadvantage, and were perhaps subject to pressure from more sophisticated societies because of anomalies in anatomical and cerebral structure. Reverting to the Russian evidence, the apparent speechlessness of the *Chuchunaa* may be the outcome of random mutation but it might equally well be a manifestation of Neanderthaloid genetic inertia.

RAPID MORPHOLOGICAL CHANGE

The question of whether or not it was possible for Neanderthal man to evolve into modern man over a relatively short period of time hinges upon whether there is any evolutionary mechanism by which this might have been accomplished. Little support exists for the theory, especially since the work of Stringer (1974) has shown the late 'classic' Neanderthals to be less, rather than more, like early sapient populations than the early 'unspecialized' group, as represented by those from Saccopastore, Ehringsdorf, and Krapina C (Shackley, 1980). It would be possible to conclude that different strains of Neanderthal man developed from an unspecialized hominid gene pool existing in Europe during the late middle Pleistocene, *sapiens* stock sharing a common origin but evolving

at a different time, in a different area and at a different pace. Neanderthal fossils are much more diverse than Upper Palaeolithic fossils and the term includes a large group without prominent 'classic' faces. If the existence of multilineal evolution is accepted, then there is no reason to propose 'interbreeding' for the so-called Neanderthal/*sapiens* 'hybrids' of the Mount Carmel sites (Ronen, 1976) which may be viewed as an unstable population from which true *sapiens* stock could have emerged. It seems likely that the more highly specialized Neanderthal groups played no part in the development of *sapiens* man, although Suzuki (1967) considers some of the Mount Carmel Neanderthals (such as Skuhl V) to be transitional, and discusses a mechanism by which the 'classic' Neanderthal face could have been transformed. He cites the facial changes in certain Japanese aristocrats over a mere 250 years as an example. The Tokugawe-Shogunate family (seventeenth to mid-nineteenth century) had their origins in the common people but assumed political supremacy over Japan and quickly developed certain facial characteristics such as reduced upper and lower jaws, lack of surface abrasion on the teeth and very poorly-developed chewing muscles which were a direct result of a gradual change to soft, well-cooked food, enhanced by selective mating. It is therefore possible, although in the writer's view unlikely, that unknown technological or behavioural changes in Neanderthal man reduced the need for a robust heavy jaw and large chewing muscles, resulting in the 'transformation' of one type into another. Pilbeam (1967) suggested that the modernization of the Neanderthal head could be a result of changes in the vocal tract as the upper part of the throat changed in a pharynx capable of producing the full human sound range. It is not, however, clear why such changes did not occur during the preceding thousands of years, nor why once initiated they progressed so quickly. Another view is expressed by Collins (1976), who considers that Neanderthal man evolved into modern man as the result of a neotenous mutation. Neoteny—slow growth and the retention of juvenile features into adult life—has often been mentioned in connexion with human evolution (Montague, 1955; Abbie, 1964), but again there seems no satisfactory reason why such a mutation should take place 35,000 years ago. Collins suggested that the large brain size of the 'classic' Neanderthals caused childbirth problems and high infant mortality rates, resulting in the survival of adults who retained low birth-to-adult brain size percentages. One result of this would be the reduction in brow ridge magnitude as a result of the development of a bulbous frontal lobe to the brain, but the wholesale mutation of an entire sub-species, while possible, remains unlikely. It also does not take into account differences in Neanderthal and *sapiens* post-cranial skeletons. In the absence of any satisfactory mechanism for the evolution of one form into another within a very short time span, it seems doubtful whether any such large-scale change took place.

COEXISTENCE AND CULTURAL OVERLAP

Recent work suggests that the relationship between Neanderthal man and *Homo sapiens sapiens* during the crucial period 55–29,000 BP is very complicated, and considerable cultural and technological overlap is suggested rather than straightforward replacement. A revision of the extent of the sterile stratographic gap where no human remains occur (Mellars, 1969) is also required as a result of Laville's (1976) analysis of the sedimentary sequences of the caves and rock shelters of Périgord. This has shown that many of the famous Neanderthal finds, notably the skeletons from Le Moustier, La Chapelle aux Saints, La Ferrassie and La Quina in fact date to a late substage of Würm II. This shortens the gap to perhaps as little as 3,000 years, and since dating in this period is chronologically reliable only to within $\pm$1,000 years a radically altered picture emerges. The discovery by Leveque and Vandermeersch (1978) of 'classic' Neanderthal skeletal remains in a Châtelperronian (Upper Palaeolithic) archaeological context at Saint Césaire (Charente Maritime) is of great interest; radiocarbon dates of 34–31,000 BP for the Châtelperronian suggest that the Saint Césaire find dates to near the first appearance of modern man in Europe, indicating considerable cultural overlap. Despite a general lack of skeletal associations, the idea that all Neanderthal remains were associated with Mousterian (Middle Palaeolithic) industries and all sapient remains with Upper Palaeolithic tools has been discarded some time ago. In some cases regional variants of the Mousterian technocomplex were manufactured virtually unchanged for thousands of years, as in the extensive sequence at Shanidar cave, Iraq (Solecki, 1971). Industries which could be called Upper Palaeolithic appear in North Africa and

central Europe before 38,000 BP, and definite Upper Palaeolithic industries such as the Châtelperronian before 35,000 BP, but the latter probably developed from the late Mousterian.

Kennedy (1980) discusses new evidence for the evolution of modern man outside Europe, but the spread to Europe at the crucial period is still ill-documented. Certainly, very early dates of 40–35,000 BP which have been quoted for Upper Palaeolithic assemblages in the Mediterranean and Near East cannot now be taken as reliable evidence for the evolution of modern man in that area. Considerable overlap between late Mousterian, early Upper Palaeolithic, and late Neanderthal early *sapiens* man is indicated. At the Israeli sites of Skuhl and Qafzeh (Ronen, 1976) Mousterian industries are associated with modern man, and at Jabrud (Syria) the Upper Palaeolithic layer 15 is stratified between two Mousterian horizons (Bordes, 1955). At Baume-Bonne the final Mousterian layers are apparently contemporary with the deposition of Upper Palaeolithic Perigordian layers nearby (Bordes, 1955). At the Grotte de Reine (Arcy-sur-Cure), long overlaps between Mousterian and Upper Palaeolithic layers occur, characterized by the persistence of Levallois flakes with a gradual change in shape towards true blades (Girard, 1976). The industry includes such Upper Palaeolithic forms as carefully polished bone awls and a series of natural backed Châtelperronian small flakes. At the Grotte de Reine, Layer I includes isolated molar teeth with very large crowns which might have belonged to Neanderthal rather than modern man, the only fossil remains associated with the Châtelperronian apart from the new Saint Césaire find and the fully sapient skeleton from Combe Capelle. Hybrid Mousterian/Upper Palaeolithic industries also occur, and there are sites such as Grotte à Melon (Pradel, 1966) where successive layers show reductions in the numbers of fine Mousterian tools and an increase in the amount of large coarse tools, giving an overall impression of degeneration.

It has also been suggested that some of the short-lived Upper Palaeolithic industries, for example the Szeletian of Central Europe, were the result of acculturation. Unless one accepts that very rapid morphological evolution took place, a theory of coexistence seems most reasonable, with a picture emerging from it of Neanderthal and early *sapiens* bands occupying different territories. The degree of contact, however, whether by trade or inter-band mating, remains pure speculation. There is ample evidence that Neanderthal bands occupied well-defined hunting territories, and that bands with different tool-making traditions could exist separately within a given region at the same time. Bordes (1972) considers that the cave of Combe Grenal (Dordogne) was occupied by the makers of his 'Typical Mousterian' variant of the Mousterian Technocomplex at the same time as a sequence of 'Typical' and 'Denticulate' industries were being manufactured at nearby Pech de l'Azé. The Denticulate Mousterians of the latter site were, therefore, at least partly contemporary with the Typical Mousterians of the former, the Dordogne river acting as a barrier between the two hunting territories. If coexistence between different Neanderthal tribal groups is probable, then coexistence between Neanderthal and *sapiens* man is possible, the sociobiological superiority of the latter leading to a gradual takeover and replacement on the best hunting grounds. The total extinction of Neanderthal man as a result of this process is unlikely since historical parallels (for example, the North American Indians of the Great Plains) suggest that the disadvantaged generally retreat slowly into less desirable and more remote areas which remain uncompeted for. It is in precisely those areas that the archaeological record is most sparse and where, as one might expect, most of the non-specific hominoid records originate.

ALMAS AND 'WILD MEN'

The idea that the Almas of Mongolia may be the descendants of Neanderthal man is not a new one. It was suggested by the late Professor Boris Porchnev (Soviet Academy of Science), some 30 years ago. A more recent paper (Porchnev, 1974) and the comments it stimulated (Bayanov & Bourtsev, 1976) have produced a revival of interest. The term *Almas* (plural *Almasti*) is a genderless Mongolian noun meaning a strange species between man and ape, but it might also come from two Mongolian words *ala* (to kill) and *mal* (animals). Linguists are undecided on the precise origin of the term, which is usually translated as 'wild man', although the literary form *kümün görögesu* is also used with the same meaning. Mongolia is full of place names associated with *almasti*, especially in the southwest, such as *Almasyn dobo* (the hills of *almasti*), and *Almasyn ulan oula* (red mountains of *almasti*) but these names are confined to the south of the country and to parts of Dzungaria over the

Chinese border. The name has been used here for all the relict hominoids whose presence has been systematically reported from the remote mountains and desert regions between the Caucasus and Ural ranges in the west and the Siberian coastal mountains in the east. In view of their internal consistency and lack of mythological overtones, the stories about Almas are not to be considered as part of the general run of Yeti (in the Himalayas) or Sasquatch (in the United States) legends. They must also be distinguished from the large-hairy primates which have recently been identified by Chinese expeditions from the Institute of Vertebrate Palaeontology (Peking) to the Shennongjia-Fanxian area of north west Hubei (China) (Zhenxin & Wanpo, 1979). The best systematic discussions are those of Sanderson (1961), Tchernine (1970) and Napier (1972), who have collated many of the stories and indicated current research directions. Specific publications are rather sparse, and the large body of work carried out in the Soviet Union remains mainly unpublished, although it is discussed at the informal 'hominoid problem seminars' held at the Darwin Museum, Moscow (Bayanov, *pers. comm.*). The problem of the Almas is an academic one, not a product of sensational reporting. A very large body of data was also accumulated by the late Professor Rinchen, of the University of Ulan Bator, who studied the Almas population of the desert areas of the Gobi, Dzungaria and the Tarim Basin, but this material is not generally available (Rinchen, 1964). Rinchen collected information about Almas from 1927 until his death in 1978 and published an article (almost in English) in which he said that he 'losed some chances to obtain at least four corpses of Almases on account of rank ignorance of time-server persons who must equipe a trip'. It has now become almost impossible to get access to his original writings, since in his later years his cultural nationalism exposed him to the ridicule of some parts of the scientific community despite his undoubted scientific qualifications. His predecessors, notably the distinguished soviet orientalist Baradyine and the Mongol scholar Jamtsarano (or Zhamtsaranov), also accumulated a great deal of information but much of it is now inaccessible. Jamtsarano did extensive fieldwork with the object of verifying *almasti* stories and plotted each find, from the end of the nineteenth century until 1928, on a special map together with the names of his informants. These generally tended to be the itinerant Mongol nomads who crossed the region and reported frequent sightings and a number of footprints.

Sightings of Almas have been made by a number of reputable scientists, but, until recently, the official attitude has been to dismiss or ignore their results. N. M. Przewalski, who discovered the Mongolian wild horse in 1881, was one of the first scientists to hint at the existence of the Almas. When he returned to Western Russia with the skeleton and skin of the new horses he also reported on evidence for the existence of 'wild men' although nothing of this was ever published and its existence was disputed. In the 1900s V. A. Khaklov, a zoologist from the then St Petersburg, travelled widely in Dzungaria, exploring the area between the Altai mountains in the north and the Tien Shan range to the south. He collected stories from the Kazakh herdsmen and carefully checked out one witness's story against another. Several Almas had been captured by local tribesmen and were observed in captivity to have remarkably consistent physical characteristics. Khaklov, quoted by Sanderson, summarized the principal characteristics of the Almas from his eye-witness reports, as follows:

> They are of medium height, with hair all over the body, absence of a forehead but prominent brow-ridges and heavy lower jaw and no chin, long arms and short legs, feet broad with big toe shorter than other toes, but massive and broad and projecting inwards, other toes fanned out.

The skull features sound very Neanderthaloid, although the bodily proportions are wrong; the height is described as 'medium' which might agree with the average Neanderthal's 1·65 m. The broad foot is also correct, and a short big toe occurs on some Neanderthal skeletons. The Toirano Neanderthal footprints, found in 1950 in a sealed cave near Rome, also show broad feet, but the big toe is not especially large nor is it longer than the other toes. The Khaklov description has many points of similarity with 'classic' Neanderthals and none at all with modern man.

Sightings of Almas continued to be reported over a wide area with a concentration of reports in the Pamir mountains of southern Russia and the Mongolian Altai. The Pamir reports are the most detailed and circumstantial and include that of one Major-General Mikail Stephanovitch Topilsky who was pursuing White Army forces as they retreated in 1917 through the Pamirs when his

troops found footprints in the snow near a deep cliff. These were followed to a cave occupied by an unfortunate Almas who, when he emerged, was promptly shot. Topilsky carefully noted the physical characteristics of the creature and even had it examined by a doctor. His troops, much struck by the man's appearance, finally gave him a ceremonial burial under a cairn of stones. Topilsky remarked upon the man-like appearance of the hominoid and its thick coat of hair, and both he and the army doctor accepted it as fully human. He produced the following description of the face:

> The eyes were dark and the teeth were large and even and shaped like human teeth. The forehead was slanting and the eyebrows were very powerful. The protruding jawbones made the face resemble the Mongol type of face. The nose was very flat . . . the lower jaws were very massive (Zerchaninov, 1964).

A more recent account comes from A. G. Pronin, a hydrologist from Leningrad University, who was on a technical expedition to another part of the Pamirs in 1957 when he saw an Almas on the cliff top about a quarter of a mile away, and caught a second glimpse a few days later. He gave a brief description, remarking that the creature was apparently well known to the local Kirghiz tribesmen (Tchernine, 1970). These reports from the Pamirs stimulated Dr Jean Koffman, Porchnev's successor, to set up a base in the Caucasus from which she applied modern market research techniques to the local inhabitants to build up 'identikit' Almas. More than 300 interviews were carried out, 30 per cent being rejected as unreliable, and the remainder produced a convincing portrait gathered from people of very different backgrounds over a wide area. She announced her findings to the Russian Geographical Society in Moscow in March 1966:

> The brow low, narrow and backward-sloping, the nose small and flat as if pinched back, the receding chin round and heavy, and the cheek bones high and Mongolian in character (Tchernine, 1970).

The Leningrad survey also produced two sites where Almas had heaped up stores of vegetable foods, and a sighting of an Almas girl which had been reported by 30 different witnesses. The girl had apparently been searching a maize field for the sweetest corn cobs and had left tooth impressions on the ones she discarded.

A recent newspaper report in *Komsomol'skaya pravda,* for September 1979, described the findings of an expedition based on Kiev, working in the Gissar mountains of the Pamir-Altai in Tajikistan, which produced footprints and sightings.

The Mongol, Kirghiz and Kazakh herdsmen regard the Almas as fully human, harmless 'wild men' who live in the mountains which they themselves have no reason to visit, except to cross from one pasture to another. During a recent visit to Mongolia the writer showed Mousterian tools from surface sites to the local people and asked whether they knew anything about them, a question repeated hundreds of times during the course of fieldwork in the south of Outer Mongolia, crossing and recrossing the fringes of the Gobi and the Altai mountains. In every case the answer was the same, that the tools had been made by people who used to live in the area and only knew how to work stone. On further questioning it was established that they were usually known by the name 'Almas' and were thought to live in caves in the mountains, making a living from hunting. Several points of interest emerged from these conversations: first, the unanimous surprise that the existence of the Almas was considered worthy of comment or investigation—to the Mongols it was common knowledge; secondly, the use of the same name over a very wide area and the fact that the Mongols considered the Almas to be fully human, even though their appearance was different. A teacher, living in a remote area of Mongolia, reported seeing a group of *almasti* in a cave, high in the mountains, who had killed and were in the process of dismembering 'a hoofed animal' (which he thought was a mountain goat) 'with sharp stones'. This report, given in the 1960s to a Russian children's doctor who had himself seen *almasti* when working in the Gobi-Altai province of Mongolia, is the only one which mentions tool use (Bayanov, *pers. comm.*). There seems no reason to doubt its validity since the originator would appear to have no incentive for inventing such a tale. The *almas* story is still continuing. Dmitri Bayanov reports new sightings from the Caucasus, Urals, Central Asia and Transbaikalia in response to articles in the Russian press describing the Darwin Museum's activities. During 1980 some members of an amateur expedition to Tajikstan (where Topilsky inspected a dead hominoid in 1958) claim to have made two contacts with the creatures and a further expedition is planned for 1981.

Apart from the physical descriptions, other features of Almas stories separate them from

general 'Bigfoot' mythology (Napier, 1972). In many cases Almas are known to have voluntarily associated themselves with modern man. A lama at the monastery of Lamyn-Hegen is one of several supposed cross-breeds between Mongolian men and Almas women, and there is also a report of a group of Almas invading a temporarily deserted camp site to warm themselves at the fire. Another story tells of an Almas woman who was found breast-feeding a human infant, which could be claimed to be proof of genetic compatibility, and Porchnev himself exhumed the body of the daughter of a female Almas from the Caucasus and found that it had 'pronounced Neanderthal features'. It is not at all surprising that groups of unknown hominoids could inhabit these areas without being described in more detail. The Altai ranges alone are very extensive, covering an area twice the size of France, which is very high (sometimes over 4,250 m), rugged, remote and honeycombed with caves. They are the home of the snow leopard (*Panthera uncia*), a near-mythical animal in its own right, so rare that for many years it too was only known from local legends until zoologists succeeded in studying wild populations. Vlček (1959) described the early literary evidence for the existence of both snow leopard and Almas in the course of an investigation of Tibetan books in the library of the Gandan monastery in what is now Ulan Bator. He also found a clear illustration of a 'wild man' included in a book on the Mongolian fauna, published at the end of the eighteenth century in Peking.

References to 'Almas' and 'wild men' are continually being produced from literature searched. The following extract is from *Hans Schiltberger's Journey into Heathen Parts* in the Manuscripts Department of the Municipal Library in Munich (L1603.B1.210^{v}). It is thought to date to about 1430 AD, and the horses to which it refers are the Przewalski type. Tschekra was a Tartar prince and Egidi a chief of a Tartar tribe, while the Arbus mountains can probably be identified with the Tien Shan range.

Tschekra joined Egidi on his expedition to Siberia, which it took them two months to reach. In that country there is a range of mountains called Arbus which is 32 days' journey long. The inhabitants say that beyond the mountains is the beginning of a wasteland which lies at the edge of the earth. No one can survive there because the desert is populated by so many snakes and tigers. In the mountains themselves live wild people, who have nothing in common with other human beings. A pelt covers the entire body of these creatures. Only the hands and face are free of hair. They run around in the hills like animals and eat foliage and grass and whatever else they can find. The lord of the territory made Egidi a present of a couple of forest people, a man and a woman. They had been caught in the wilderness, together with three untamed horses the size of asses and all sorts of other animals which are not found in German lands and which I cannot therefore put a name to. (Staa H. Biblio, Munich).

This account is in many ways a typical, if more detailed than usual, medieval 'wild man' story. An extensive literature of these exists, together with much controversy over their interpretation, and it is difficult to sort out fact from fiction. Bernheimer (1952) surveys all the 'wild man' evidence from France and northern Europe, and Gomez-Tabanera (1978) has recently produced a similar body of information for the Iberian peninsula, with special reference to the possibility of Neanderthal survival. This, together with the Russian data, represents an impressive body of material which it is difficult to disregard. Bayanov & Bourtsev (1976) discussed Porchnev's theory that Europe has been inhabited by relict hominoids, probably Neanderthals, from very earliest times, and that these are plentifully attested in the writings of classical authors such as Lucretius, Plutarch and Pausanias, but called 'woodland people' or 'satyrs'. In medieval and post-medieval contexts the stories are supplemented by drawings and very circumstantial descriptions. The theory deserves serious consideration, but clearly, while not denying the possibility of Neanderthal survival being documented in this way, it is usually impossible to disentangle all the elements of myth, folklore and distorted fact which together produce a written tradition. The Almas stories are a different matter, especially those of the last 100 years with observations by trained professional scientists. While it seems impossible to deny the existence of the Almas, the problem of classification remains. The identification of Almas as relict Neanderthals is a hypothesis only, but it has much to recommend it both on the basis of observed physical characteristics and behaviour. It can never be more than a hypothesis until firm skeletal proof is made available. The term 'Neanderthal' accommodates hominids of a wide variety of appearance and abilities, and there is every reason to suppose that

a population of Neanderthals was just as varied in appearance as modern man. Equally strong contrasts between the inhabitants of different areas would be expected, and it would therefore be unreasonable to expect absolute congruity in the fossil record. The same principle must be extended to eye-witness observations of present physical types. No two people will describe an event, let alone a hominoid, in quite the same way.

If we accept the possibility that small populations of Neanderthals have survived in remote mountain areas, and remove the 'formidable mental block' (Bayanov & Bourtsev, 1976) which prevents modern man from admitting that he might have extant relatives, we now have a strong candidate. Systematic analysis of Mongolian Mousterian assemblages suggests that many are atypical and cannot reasonably be squeezed into conventional European divisions. In Mongolia the Mousterian sites are to be found on alluvial terraces and near cave entrances up to the limit of the permanent snow cover in areas which would have been most inhospitable during the late Pleistocene. In the absence, so far, of absolutely dated sites it is difficult to say when precisely these industries were manufactured and some could, indeed, be quite recent. If small relict Neanderthaloid populations are to be found in these remote areas their numbers must be rapidly dwindling, and all the evidence suggests that the Almas at the best exhibit only a pitiful parody of the Neanderthal life-style. The need for systematic work on this problem is clear; there is an obvious need to locate and excavate high altitude sites together with long-term observation of test areas. Only in this way will the matter be resolved, but the importance of the hypothesis to be tested surely deserves serious and open-minded consideration.

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